

dowed also with the sense of touch, will clearly explain in every instance the agitation, delirium or stupor of the insect, it being in fact tantamount to a total deprivation of the faculties of hearing, feeling, and, I might almost add, of speaking.

XLVII. *Memoir on the Genus Holoptilus.* By J. O. WESTWOOD, F.L.S. &c.

[Read 2nd April, 1838.]

THE genus *Holoptilus*, belonging to the terrestrial section of the Heteropterous *Hemiptera*, is one of those singular groups, of which examples are to be found in almost every tribe of creatures, which not only attract attention from their peculiar forms, but at the same time baffle the naturalist in his endeavours to arrange them with the existing well-determined families. This difficulty is of a twofold nature, resulting firstly from inaccurate observations on the structure of such groups, and, secondly, from their actual anomalous structure.

The body of these exotic insects is of small size and depressed, and thickly clothed with acute rigid setæ. The head is small, and narrowed behind into a short neck; the eyes are round and very prominent. The ocelli in *H. fuscus* and *Lemur* are very distinct, glittering, and placed on the hind part of the head, at an equal distance from each other and from the lateral margin of the head. They also, as it appears to me upon a careful examination, exist in *H. ursus*, although their existence in that species is denied by Messrs. Saint Fargeau and Serville, who were only acquainted with that species. The rostrum is short and thick, scarcely extending beyond the head, its tip being received in an impression in the front part of the prosternum. It consists of three joints, of which the basal one occupies more than two-thirds of the entire length of the organ, the two apical joints being very short. This is its structure, both in *H. ursus* and *Lemur*, although Saint Fargeau, Serville, and Burmeister, describe the second joint as by far the longest. I cannot discover any short transverse basal articulation, neither can I detect the labrum. The antennæ are long and densely clothed with long rigid setæ, varying in the proportion and apparently also in the number of their joints, as described more in detail below. The thorax is short, divided transversely into two portions, whereof the anterior is the shortest and nar-

rowed, and the posterior, thrice as broad as the head, with the sides rounded. The scutellum is small and triangular. The hemelytra are large, and extend beyond the abdomen, the corium being very small and basal, with two thick nerves united obliquely behind. The apical membrane is very large, and of a somewhat leathery consistence. In *H. Lemur* and *fuscus* the membrane is furnished with strong nerves, but in *H. ursus* they are almost obliterated. The wings, the existence of which is denied by Saint Fargeau, are of a very small size in *H. ursus* and destitute of nerves. They are of a larger size in *H. Lemur*, with three longitudinal nerves. The legs are slender and thickly setose, the four anterior being of a moderate size, but the posterior are longer, the tibia especially being elongated and curved, and very densely clothed with hairs, which in *H. Lemur* and *fuscus* are of a woolly appearance, but in *H. ursus* they are rigid setæ. At the tip of the anterior tibiæ are several rigid setæ on the inside, but these are not to be compared to the cushion at the tips of the anterior tibiæ of some of the *Reduviidæ*. The tarsi have been hitherto described as three-jointed, but after a very careful examination I can only detect two joints, the basal being very minute and obliquely truncate, and the terminal joint long and clavate in the four anterior legs, but broad in the posterior pair. This is the structure in *H. Lemur* and *ursus*. The abdomen is short, broad, and rounded; its ventral surface very convex, and consisting of five joints in the male and of six in the female.

The genus was established by Saint Fargeau and Serville, in the tenth volume of the *Encyclopédie Méthodique*, p. 280, for the reception of a small insect from the Cape of Good Hope, *H. ursus*. It was placed without hesitation in the family *Reduviidæ* or *Nudicolles*. The antennæ of the typical species were described as three-jointed only.

Subsequently Gray, in the *Zoological Miscellany* (1831, p. 34), proposed a new genus, under the name of *Ptilocerus*,* for another insect, discovered in India by General Hardwicke, and of which a highly magnified drawing is preserved in his series of figures of Indian insects now in the British Museum. The genus was stated to be most allied to *Holoptilus*, but the antenna is four-jointed.

The not very appropriate specific name of *Ptilocerus fuscus* was given to the type. Laporte, Comte de Castelnau, in his *Revision of the Hemiptera* (p. 7), introduced the genus amongst the *Redu-*

* *Ptilocerus*, a genus of exotic *Diptera* described by Wiedemann.

viidæ, giving its characters from Saint Fargeau, with a figure of the typical species. In a subsequent page (47), however, he introduced it, under the name of *Lasiocera*, into his synoptical table of his *Tingidites*; and at page 50 he corrected the name to *Holoptilus*, and stated his conviction that it belonged to that group of *Hemiptera*. Lastly, Burmeister (*Handbuch der Entomol.*, vol. ii. p. 248) gave a new description of the genus, retaining *H. ursus* as its type, but stating that a second species from Java was contained in the Royal Collection of Berlin. He placed the genus at the end of his family *Ruduvini*, immediately preceding the *Membranacei* of Latreille (*Cimex*, *Tingis*, &c.).

Of the affinities of this genus, Messrs. St. Fargeau and Serville observe, that “*Les Holoptiles*, par la masse de leurs caractères, se rapprochent des *Réduves*, mais les antennes triarticulées, la nature homogène de leurs élytres, et l’absence des ailes, les en distinguent.” There is indeed some resemblance in the nature of the hemelytra of these insects and some of the *Reduviidæ*, such as *Enicocephalus*, Westw., and *Opisthoplatys*, Westw.; but in all the insects of the last-mentioned family which I have examined the intermediate joint of the rostrum is by far the largest. The tarsi in *Reduvius* are distinctly three-jointed,* the terminal joint not occupying more than half the tarsus, and (except in such genera as *Ploiaria* and *Emesa*) the anterior tibiæ are terminated by a brush or cushion-like plate, more or less developed, and which is even to be found in the *Zeli*. The simple structure of the fore-legs, and the exposed rostrum, separate it from the *Phymatites* of Laporte, whilst the two-jointed tarsi and three-jointed rostrum separate it from *Tingis*, &c., in which the tarsi are three-jointed and the rostrum four-jointed. The three-jointed tarsi separate it from *Cimex*, which have three-jointed tarsi, but in which the rostrum is three-jointed. In *Aradus*, however, the rostrum is three-jointed and the tarsi four-jointed, as in *Holoptilus*. We should therefore be induced to regard it as most nearly allied to this group, but the rostrum is exposed, that is, not received when at rest in a canal formed by elevated margins on the underside of the head, and the general appearance of the insects is far removed from *Aradus*. It will perhaps be the most natural course to regard it as an osculant genus intermediate between *Reduvius* and some of the *Cimicidæ*.

As to the geographical range of this little group, it appears to be very widely distributed. The Cape of Good Hope is the

* This is the case with *Lophocephala* of Laporte. See Burmeister, vol. ii. p. 244.

locality of the typical species.* General Hardwicke's insect was from Nepal, and Dr. Horsfield also found it in Java; and I have now to add another species from Van Diemen's Land. I am also able slightly to characterize a fourth species from Java in the Royal Collection of Berlin, hoping to receive a figure and more ample description of it from Dr. Burmeister in time for publication.

Notwithstanding the variations in structure which exist in the species, I am inclined to retain them in the same genus on account of their great general relation together, although I fear I shall be blamed for retaining such diversities of organization. It will be convenient, however, to establish a sub-genus for the reception of the *Indian* and *Australian* species, on account of the strong nervures of the hemelytra. I would for these species have retained Gray's name, *Philocerus*, but it had been long previously employed in Entomology.

Sub-genus 1. HOLOPTILUS, strictè sic dictus.

Antennæ, ut videtur, † 3-articulatæ; articulo 2do longissimo curvato, setis in triplici serie dispositis; articulo 3tio minuto. *Caput* postice tuberculatum. Hemelytrorum *membrana* nervis obsoletis; *alæ* minutissimæ, *aveniæ*; *tibiæ* posticæ setis in triplici serie dispositis.

Species 1. *H. ursus*. (Plate XXII. Fig. 6.)

Fuscus, albo-sericeus; hemelytris albis, macula magna versus basin alterisque tribus minutis ad marginem externum fuscis, setis fuscis, serie intermediâ antennarum et tiliarum posticarum albâ.

Long. corp. (alis exp.) lin. $2\frac{1}{2}$. Expans. hemelytr. lin. 4.

Habitat apud Cap. Bon. Sp. Delalande.

In Mus. Reg. Paris., Berol. et nostr.

* In the Crochard edition of the *Règne Animal* an indifferent figure is published of *Holoptilus ursus* (*Insectes*, pl. 92, fig. 2), and in the text New Holland is given as its locality; but my specimen, which I obtained from the collection of the Jardin des Plantes is ticketed by M. Audouin himself "Cap. de b. esper. Delalande." The Cape is also given as its locality in the *Encyclopédie Méthod.*, and I am informed that Mr. Macleay obtained specimens from the Cape in a large collection which he purchased from M. Verreaux.

† Burmeister, who gives *H. ursus* as the type of the genus, describes the antennæ as four-jointed. Saint Fargeau, however, gave them in that species as three-jointed, and in my specimen they are also three-jointed and exhibit no appearance of mutilation.

H. ursus. Saint Fargeau and Serville, *Enc. Méth.* 10, 280 ; Burmeister, *Handb. der Ent.* 2, p. 248 ; Laporte, *Revis. Hemipt.* p. 7, g. 2, and p. 50 ; *Règne An.* Crochard Edit. Ins. pl. 92, fig. 2.

Sub-genus 2. Ptilocnemus.

Antennæ 4-articulatæ ; articulo 2do longo curvato, duobus apicalibus parvis, setis irregularibus. Hemelytrorum *membrana* nervis crassis munita ; *alæ* posticæ parvæ nervis tribus longitudinalibus ; *tibiæ* posticæ valdè piloso-setosæ.

Species 2. *Holopt.* (*Pt.*) *Lemur*. (Plate XXII. Fig. 7.)

Luteo-fulvus, nigro-setosus, antennarum articulo 3tio fere dimidio longitudine 2di, 4to præcedenti minori ; hemelytris ad basin pallidis, plagâ magnâ nigrâ ad medium membranæ extensâ, apice pallidè fusco, maculis nigris ; nervis tribus longitudinalibus ; femoribus posticis (apice excepto) tibiisque posticis (nisi ad basin) nigris ; abdomine subtus nigro nitido, in medio fulvo.

Long. corp. lin. $3\frac{1}{2}$. Expans. hemelytr. lin. 7.

Habitat in Terrâ Van Diemenii.

In Mus. nostr. Communic. DD. Lewis et Ewing. Etiam in Mus. Reg. Paris. et Hope.

Obs.—The larva bears a close general resemblance to the imago, differing of course in the absence of hemelytra and wings, and also, which is remarkable, in having the posterior tibiæ and the coating of hairs of a dirty white colour, the thighs being annulated with black and dirty white.

Species 3. *Holopt.* (*Ptil.*) *fuscus*. (Plate XXII. Fig. 8.)

Pallidè fusco-rufescens ; hemelytris ad basin pallidis, membranâ magis rufescenti, apice fusciscenti ; antennis articulo 2ndo valdè elongato, 3tio minuto, 4to præcedenti duplo majori ; hemelytris nervis 4 longitudinalibus nervisque nonnullis ad apicem adjectis, cellulas quadratas apicales formantibus, lineis maculisque ovalibus albidis inter nervos ; tibiis posticis valdè et longè luteo-rufescenti setosis.

Long. alis clausis lin. $4\frac{1}{2}$.

Habitat in Nepaliâ—D. Hardwicke. In Javâ—D. Horsfield.

In Mus. Soc. Linn. Lond. ; Soc. Merc. Ind. Orient. Londin. et Serville, Parisiis.

Syn.—*Ptilocerus fuscus*. Gray, *Zool. Misc.* p. 34.

Obs.—The accompanying figure was made from specimens

contained in the collection of the Linnæan Society. Gray's description appears to have been drawn up from General Hardwicke's drawings alone, the species not being in the collection at the British Museum.

Species 4. *Holopt. (Ptil.) affinis*.

Pallidè fuscus, fusco-setosus; antennis pedibusque luteo-fuscis; hemelytrorum basi pallido, membranâ apicali maximâ ferrugineâ lineis maculisque pallidioribus inter nervos dispositis, maculâ ad marginem externum membranæ apicalis versus basin alteraque versus apicem obscuris; tibiis posticis internè et externè densè pilosis.

Long. corp. (alis clausis) lin. $3\frac{2}{3}$.

Habitat in Insulâ Javâ.

In Mus. Regal. Berol.

DESCRIPTION OF THE FIGURES.

Plate XXII.

Fig. 6. *Holoptilus ursus*. 6 a, proboscis; 6 b, apex of antenna; 6 c, hind wing.

7. *Holoptilus (Ptilocnemus) Lemur*. 7 a, head sideways; 7 b, fore wing; 7 c, hind wing; 7 d, intermediate tarsus; 7 e, posterior tarsus; 7 f, male abdomen seen beneath; 7 g, female abdomen seen beneath.

8. *Holoptilus (Ptilocnemus) fuscus*.

XLVIII. *Notice of some Peculiarities observable in the Cornea of the Eyes of certain Insects.* By ROBERT J. ASHTON, Esq.

[Read 1st May, 1837.]

THE following two or three observations relating to some facts connected with the organ of vision in certain insects, which, as far as I am aware, have not heretofore been noticed by entomologists, I have thought it right to lay before the Society, in order to draw attention to the subject, and perhaps elicit something of interest from its consideration.

Burmeister, whose valuable "Manual" presents a compendious summary of all the observations previously made upon insects, in describing the structure of their compound eyes, says, "The horny integument consists of many small hexagonal surfaces, which cor-